

Acute lower gastrointestinal bleeding

Nicola S Fearnhead

Abstract

Acute lower gastrointestinal bleeding often presents a challenging clinical situation. Bleeding may be severe and associated with significant haemodynamic compromise, and yet usually stops spontaneously. The causes are various, and the bleeding source may be difficult to identify, even with sophisticated diagnostic methods. Colonoscopy, CT angiography, mesenteric angiography and radionuclide scintigraphy offer a choice of diagnostic tools. Intervention is occasionally required; the options include therapeutic colonoscopy, super-selective embolization and surgical resection.

Keywords angiodysplasia; bleeding scan; colectomy; colonoscopy; CT angiography; diverticular disease; embolization; gastrointestinal bleeding; mesenteric angiography

Definition

Acute lower gastrointestinal (LGI) haemorrhage refers to acute bleeding from the gastrointestinal tract distal to the ligament of Treitz at the junction between the fourth part of the duodenum and the proximal jejunum. The source of the haemorrhage is most commonly colonic but may occasionally be from within the small intestine.

Epidemiology

LGI haemorrhage accounts for about 20% of all cases of acute gastrointestinal haemorrhage.¹ The annual incidence is about 20 per 100,000 population in Westernized countries.² The majority of patients are elderly, but the condition may affect any age group. There is a slight preponderance in men.²

Causes and differential diagnosis (Table 1)

The most common causes of LGI bleeding are diverticular disease (Figure 1) and angiodysplasia.^{3,4} Anticoagulant or antiplatelet therapies do not cause LGI bleeding but may exacerbate haemorrhage, or unmask a bleeding source (e.g. colonic malignancy). Bleeding may present as melaena from the small intestine, altered blood from the right colon, dark red blood from the left colon and bright red blood from the anorectum. Profuse fresh blood *per rectum* may represent a brisk bleed from any site within the gastrointestinal tract.

The risk factors for diverticulosis include age, low-fibre diet, obesity and geographical location. The use of non-steroidal anti-

inflammatory drugs (NSAIDs) is a risk factor for diverticular haemorrhage. A significant proportion of diverticular haemorrhages are massive, but less than 10% require emergency intervention.

Angiodysplasia is an acquired malformation of the intestinal blood vessels, characterized by dilated submucosal veins and mucosal capillaries. It usually affects the elderly and commonly occurs in the right colon. Angiodysplasia may be recognized during colonoscopy by the characteristic leash of bright red dilated vessels. Angiographic appearances of angiodysplasia include early filling of vessels and bleeding during the capillary phase.

Other potential sources of colonic bleeding include colonic polyps and tumours, and sites of colonoscopic intervention (e.g. biopsy or polypectomy).^{5,6} Inflammatory bowel disease, infectious or ischaemic colitis and radiation proctitis may all present with LGI bleeding. A past history of abdominal aortic aneurysm repair raises the possibility of aortoenteric fistula, particularly if there is a history of an infected graft. Haemorrhoids and fissures are common causes of rectal bleeding; less common sources include solitary rectal ulcer syndrome and anorectal varices.

Diagnosis

History

The classical presentation is passage of blood or melaena *per rectum* with either symptoms of anaemia (fatigue, lethargy) or hypovolaemia (postural hypotension, collapse, dizziness or syncope). Important features in the history include previous episodes, anaemia, recent colonoscopy, and bleeding diatheses. A past history of aortic surgery or radiotherapy may suggest the cause. Drug history is particularly important with respect to NSAIDs, antiplatelet therapy (aspirin and clopidogrel) and anticoagulation (warfarin). Comorbidities are also relevant: the

Differential diagnosis of lower gastrointestinal haemorrhage^{3,4,19}

Colonic	Anorectal	Ileojejunal
Diverticular disease	Haemorrhoids	NSAID ulceration
Angiodysplasia	Anal fissure	Meckel's
Ulcerative colitis	Solitary rectal ulcer	diverticulum
Crohn's colitis	Radiation proctitis	Angiodysplasia
Ischaemic colitis	Rectal varices	Arteriovenous
Infectious colitis	Anorectal trauma	malformation
Pseudomembranous colitis		Visceral aneurysm
Colorectal carcinoma		Crohn's disease
Colorectal polyps		Aortoenteric fistula
Colonoscopic intervention ^{5,6}		Strictureplasty site
Anastomotic haemorrhage		
Visceral aneurysm		
Autoimmune vasculitis		

Table 1

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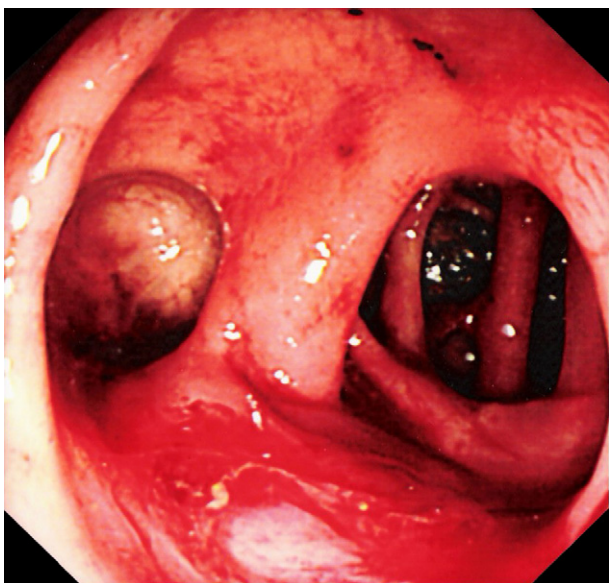


Figure 1 Colonoscopic appearances of bleeding diverticular disease.

elderly patient with ischaemic heart disease or cardiac failure is less likely to tolerate either massive haemorrhage or massive transfusion.

Physical examination

The ABCDE algorithm of assessment and resuscitation should be applied to any patient with LGI haemorrhage. If there is clinical evidence of haemodynamic instability, then resuscitation should be instituted before history or examination. Tachypnoea, cool peripheries, tachycardia, hypotension, agitation and altered mental state all suggest a significant bleed. Formal assessment is made after resuscitation and includes physical, abdominal and digital rectal examinations. Rigid sigmoidoscopy is mandatory to rule out anorectal pathology.

Resuscitation and initial investigations

Two large-bore intravenous cannulas should be inserted for resuscitation with intravenous crystalloid or colloid while awaiting matched blood for transfusion. It will be necessary to use O negative blood in some circumstances. Blood tests should include a full blood count, clotting screen, urea and electrolytes and cross-match. Blood transfusion is carried out according to the haemodynamic status of the patient, haemoglobin level and haematocrit. Any evidence of coagulopathy should be corrected. A urethral catheter should be inserted to measure urine output, and a central line may be useful to guide fluid replacement. Oesophagogastroduodenoscopy should be carried out as soon as feasible in any patient with LGI haemorrhage and haemodynamic instability to rule out an upper gastrointestinal source.

Definitive investigations

The SIGN guidelines recommend colonoscopy or CT angiography after initial resuscitation.⁷ Colonoscopy after full bowel preparation is the investigation of choice in the stable patient.

Colonoscopy during the acute LGI bleed requires copious lavage to allow localization of the bleeding point (Figure 1). The therapeutic options to control haemorrhage include

injection with adrenaline, argon plasma coagulation and clipping.^{8–10} Colonoscopic haemostasis is particularly effective for diverticular and post-polypectomy haemorrhage.⁷ Colonoscopic tattoo of the bleeding site with injectable India ink marks it in case the patient subsequently requires surgical resection of the affected colon in the event of further haemorrhage. Logistical factors, available expertise and the likelihood of a localized source of bleeding predicate the use of early colonoscopy in the evaluation of acute LGI haemorrhage.¹¹

Multi-section abdominal CT scan with intravenous contrast (CT angiography) will often demonstrate a bleeding source with a blush of contrast in the bowel lumen if the patient is actively bleeding (Figure 2).^{12,13} It may also give additional information such as the extent of colitis, presence of malignancy, staging of metastatic disease or mesenteric vessel occlusion. Patients with clinical evidence of severe bleeding (tachycardia and hypotension) usually undergo selective mesenteric angiography.⁷ Successful angiography depends on a bleeding rate of at least 1 ml per minute. Advances in endovascular techniques have made super-selective catheterization and embolization of small visceral arterial branches possible.¹⁴ Early complications include re-bleeding, colonic ischaemia, renal failure and femoral pseudoaneurysm while late complications include recurrent haemorrhage and colonic stricture.¹⁵ Mesenteric angiography may also identify angiodysplastic lesions once bleeding has ceased. Provocative mesenteric angiography with tissue plasminogen activator, heparin or tolazoline may have a role in the patient where recurrent LGI bleeding cannot be localized by other means.¹⁴

Technetium-99m-labelled red blood cell scintigraphy requires a bleeding rate of just 0.1 ml per minute to detect bleeding¹⁶ but does not have the sensitivity or specificity of either colonoscopy or selective mesenteric angiography.¹⁷ It is most often used when other investigations have failed to identify a bleeding source. Radionuclide scanning has no therapeutic potential but may



Figure 2 CT angiography showing blush of intravenous contrast at bleeding point at hepatic flexure in patients with acute colonic haemorrhage.

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